

- [002]        This application is a national stage completion of PCT/EP2003/009372    ⇐  
               filed August 23, 2003 which claims priority from German Application Serial    ⇐  
               No. 102 39 393.1 filed August 28, 2002.     ⇐
- [003]        FIELD OF THE INVENTION     ⇐
- [004]        ~~According to the preamble of claim 1, t~~ The invention concerns a shaft-    ⇐  
               hub connection known by EP-B 0 784 75.
- [005]        BACKGROUND OF THE INVENTION     ⇐
- [008]        SUMMARY OF THE INVENTION     ⇐
- [012]        BRIEF DESCRIPTION OF THE DRAWINGS     ⇐
- [013]        ~~— In the drawing is shown one embodiment of the invention which is~~    ⇐  
               ~~described in detail herebelow. In the drawing~~ The invention will now be    ⇐  
               described, by way of example, with reference to the accompanying drawings in    ⇐  
               which:     ⇐
- [018]        DETAILED DESCRIPTION OF THE INVENTION     ⇐
- [020]        Fig. 2 shows the pinion shaft 8 of Fig. 1 as a separate part with the shaft  
               segment 2 which has an axial extension L. The shaft segment 2 has four  
               segments, namely, the front centering segment 6 with the width A; the central  
               toothed shaft segment 5 with the width B; the rear centering segment 7  
               in joint direction with the width C, and one groove 9 with the width D. The  
               segments 5, 7 of the widths B plus C have the same external diameter d2. The  
               front centering segment 6 of the width A has a smaller diameter d1. Between    ⇐  
               the toothed segment B and the front centering segment A is situated the  
               groove 9D with a diameter d3 which is smaller than d1; it corresponds to the root  
               diameter dF such as plotted in a side view in Fig. 2a. The toothing of the shaft  
               segment 5 is a knurled toothing produced by a roller tool. The toothing shaft  
               segment 5 extends with its root area into the segment D whereby the production  
               of the knurled toothing is simplified. The rear centering segment 7, lying in joint  
               direction passes with a radius r into a shaft collar 10 which forms the front face  
               of the pinion 4.

1-4. (CANCELED)

5. (NEW) A shaft-hub connection (1) between a shaft segment (2), which has one central toothed segment (B), the same as adjacent centering segments (A, C), and a stepped hole (11) in a hub (3), a shaft (2) and a hub (3) being jointed in axial direction (X) and, to produce a positive fit (5), a counter profile is cut in the hub (3) by the toothed segment (B), a front centering segment (A) in joint direction has a diameter (d1) and the toothed segment (B), the same as a rear centering segment (C) lying in joint direction, has a diameter (d2) larger than the diameter (d1) of the front centering segment (A) , the hole (11) has only two adjacent segments (I, II) with different diameters (D1, D2), that the diameter (d1) in the front centering segment (A) with a diameter (D1), the same as the diameter (d2) in the rear centering segment (C) with a diameter (D2), forms a respective joint fit and the diameter (d2) in the central toothed segment (B) with the diameter (D1) forms the positive fit (5).

6. (NEW) The shaft-hub connection according to claim 5, wherein between the central toothed segment (B) and the front centering segment (A) one other segment (D) is located which has a diameter (d3) smaller than the diameter (d1) of the front centering segment (A).

7. (NEW) The shaft-hub connection according to claim 6, wherein the toothed segment (B) has one knurled toothing (5) with a root diameter (dF) and that the diameter(d3) is  $\leq$  the root diameter (dF).

8. (NEW) The shaft-hub connection according to claim 5, wherein the centering segment (C) changes over to a shaft collar (10) which abuts on a front face (12) of the hub (3).

9. (NEW) A shaft-hub connection (1) between a shaft segment (2) and a hub (3), the shaft segment (2) having one central toothed segment (B) and adjacent centering segments (A, C), the hub (3) having a stepped hole (11), the shaft segment (2) and hub (3) being jointed in an axial direction (X) and to produce a positive fit (5) a counter profile is cut in the hub (3) by the central toothed segment (B), a front centering segment (A) in a joint direction has a first diameter (d1), the central toothed segment (B) and the rear centering segment (C) lying in the joint direction have a second diameter (d2), the second diameter (d2) is larger than the first diameter (d1), the stepped hole (11) has a third segment (I) with a third diameter (D1) and a fourth segment (II) with a fourth diameter (D2), the first diameter (d1) is approximately

equal to the third diameter (D1), the second diameter (d2) is approximately equal with to fourth diameter (D2), the front centering segment (A) of the shaft segment (2) and the third segment (I) of the stepped hole (11) forming a joint fit, the rear centering segment (C) of the shaft segment (2) and the fourth segment (II) of the stepped hole (11) forming another joint fit, the rear centering segment (C) of the shaft segment (2) and the third segment (I) of the stepped hole (11) forming a positive fit (5).

10. (NEW) The shaft-hub connection according to claim 9, wherein one additional segment (D) is located between the front centering segment (A) and central toothed segment (B) and has a third diameter (d3) smaller than the first diameter (d1).

11. (NEW) The shaft-hub connection according to claim 10, wherein the central toothed segment (B) has one knurled toothing (5) with a root diameter (dF), the third diameter (d3) is less than or approximately equal to the root diameter (dF).

12. (NEW) the shaft-hub connection according to claim 9, wherein the rear centering segment (C) changes into a shaft collar (10) which abuts on a front face (12) of the hub (3).